

IN THE CLAIMS:

This listing of claims will replace all prior versions and listing of claims in the application:

1. (Original) A method of producing a biochemical, comprising the steps of:
providing a microorganism on a support;
positioning said support such that said microorganism has access to a first medium providing conditions for growth of said microorganism;
separating said microorganism from said first medium; and
positioning said support such that said microorganism has access to a second medium providing conditions for biosynthesis of said biochemical by said microorganism.
2. (Original) A method in accordance with claim 1 including the step of extracting said biochemical from said second medium.
3. (Original) A method in accordance with claim 1 including the step of extracting said biochemical from biomass of said microorganism.
4. (Original) A method in accordance with claim 2 or claim 3 including the step of separating said biochemical from an extract the product of said extracting step.

5. (Original) A method in accordance with claim 4 wherein the step of separating said biochemical includes performing high pressure liquid chromatography on said extract.
6. (Previously Presented) A method in accordance with claim 1 including the step of controlling delivery of said first medium to said microorganism when said microorganism has access thereto.
7. (Original) A method in accordance with claim 6 wherein said step of controlling delivery of said first medium includes the step of regulating a pressure gradient along which said first medium is delivered.
8. (Previously Presented) A method in accordance with claim 6 wherein said step of controlling delivery of said first medium includes the step of regulating a humidity gradient along which said first medium is delivered.
9. (Previously Presented) A method in accordance with claim 6 wherein said step of controlling delivery of said first medium includes the step of regulating a concentration gradient along which said first medium is delivered.
10. (Previously Presented) A method in accordance with claim 1 including the step of controlling delivery of said second medium to said microorganism when said microorganism has access thereto.

11. (Original) A method in accordance with claim 10 wherein said step of controlling delivery of said second medium includes the step of regulating a pressure gradient along which said second medium is delivered.

12. (Previously Presented) A method in accordance with claim 10 wherein said step of controlling delivery of said second medium includes the step of regulating a humidity gradient along which said second medium is delivered.

13. (Previously Presented) A method in accordance with claim 10 wherein said step of controlling delivery of said second medium includes the step of regulating a concentration gradient along which said second medium is delivered.

14. (Previously Presented) A method of developing a pharmaceutical product comprising the steps of:

performing the method of claim 1 in respect of a microorganism under investigation;

applying mass spectrometry analysis to a sample generated by the method; and
identifying a biochemical component of the sample for further investigation.

15. (Original) A method in accordance with claim 14 comprising the step of:
testing the identified biochemical for pharmaceutical efficacy.

16. (Original) A method in accordance with claim 14 including the step of:
preparing said biochemical for human or animal consumption.
17. (Previously Presented) A method of developing an agrochemical comprising the steps of:
performing the method of claim 1 in respect of a microorganism under investigation;
applying mass spectrometry analysis to a sample generated by the method; and
identifying a biochemical component of the sample for further investigation.
18. (Original) A method in accordance with claim 17 comprising the step of:
testing the identified biochemical for agrochemical efficacy.
19. (Original) A method in accordance with claim 18 including the step of:
preparing said biochemical for agricultural application.
20. (Previously Presented) A method of producing a pharmaceutical product including the steps of:
producing a plurality of samples of biochemicals, each sample being produced by means of the method of claim 1;
testing each sample for pharmaceutical efficacy of the biochemical; and
for a sample of a biochemical showing pharmaceutical efficacy, producing and preparing said biochemical for human or animal consumption.

21. (Previously Presented) A method of producing an agrochemical product including the steps of:

producing a plurality of samples of biochemicals, each sample being produced by means of the method of claim 1;

testing each sample for agrochemical efficacy of the biochemical; and

for a sample of a biochemical showing agrochemical usefulness, producing and preparing said biochemical for agricultural application.

22. (Original) A method in accordance with claim 20 or claim 21 wherein said testing step includes directly applying an identification analysis method to each sample and thereafter performing efficacy tests on identified biochemical components of said samples.

23. (Original) A method in accordance with claim 22 wherein said step of applying an identification analysis method comprises applying mass spectrometry analysis to each sample.

24. (Original) A method in accordance with claim 22 wherein said step of applying an identification analysis method comprises applying chromatographic analysis to each sample.

25. (Previously Presented) A method in accordance with claim 20 wherein said positioning step places the microorganism with access to a medium providing conditions for a secondary metabolism pathway to be established, said biochemical being a secondary metabolite of said microorganism.

26. (Original) Apparatus for producing a biochemical including:
storage means for storing a medium for use by a microorganism;
support means for supporting a microorganism such that said microorganism has access in use to medium stored in said storage means, wherein said support means is separable from medium stored in said storage means in use.

27. (Original) Apparatus in accordance with claim 26 including delivery means for delivering medium from said storage means to a microorganism supported in use in said support means.

28. (Original) Apparatus in accordance with claim 27 wherein said delivery means defines a capillary pathway for delivery of medium.

29. (Original) Apparatus in accordance with claim 27 or claim 28 wherein said support means is arranged to segregate in use a microorganism supported thereon from medium stored in said storage means.

30. (Previously Presented) Apparatus in accordance with claim 27 wherein said support means includes manipulation means extending out of said storage means for aseptic manipulation of said support means.
31. (Original) Apparatus in accordance with claim 30 wherein said manipulation means is integral with said support means.
32. (Previously Presented) A method in accordance with claim 1 wherein said positioning step places the microorganism with access to a medium providing conditions for a secondary metabolism pathway to be established, said biochemical being a secondary metabolite of said microorganism.
33. (Previously Presented) A method in accordance with claim 14 wherein said positioning step places the microorganism with access to a medium providing conditions for a secondary metabolism pathway to be established, said biochemical being a secondary metabolite of said microorganism.
34. (Previously Presented) A method in accordance with claim 17 wherein said positioning step places the microorganism with access to a medium providing conditions for a secondary metabolism pathway to be established, said biochemical being a secondary metabolite of said microorganism.

35. (Previously Presented) A method in accordance with claim 21 wherein said positioning step places the microorganism with access to a medium providing conditions for a secondary metabolism pathway to be established, said biochemical being a secondary metabolite of said microorganism.

36. (New) A method of producing a biochemical, comprising the steps of:

inoculating with a microorganism a first face of a support means forming a dividing partition defining first and second volumes of a container, said first volume being in communication with the ambient atmosphere via a gas permeable plug;

mounting said support means to said container with said first face of the support means exposed to said first volume and isolated from said second volume;

supplying to said second volume a first medium providing conditions for growth of said microorganism;

allowing access to said first medium by said microorganism;

allowing said microorganism to grow at the air/first medium interface;

ending access of said microorganism to said first medium and separating said microorganism therefrom by removing a portion of the container which contains said first medium;

attaching to said container a replacement for said removed portion;

supplying to said second volume a second medium providing conditions for biosynthesis of said biochemical by said microorganism;

allowing access to said second medium by said microorganism, and

allowing said microorganism to secrete said biochemical into said second medium.

37. (New) A method according to claim 36 wherein the second medium provides conditions for a secondary metabolism pathway to be established, said biochemical being a secondary metabolite of said microorganism.

38. (New) A method according to claim 36 including the step of extracting said biochemical from said second medium.

39. (New) A method according to claim 36 including the step of extracting said biochemical from biomass of said microorganism.

40. (New) A method according to claim 38 including the step of separating said biochemical from an extract the product of said extracting step.

41. (New) A method according to claim 40 wherein the step of separating said biochemical includes performing high pressure liquid chromatography on said extract.

42. (New) A method according to claim 36 including the step of controlling delivery of said first medium to said microorganism when said microorganism has access thereto.

43. (New) A method according to claim 42 wherein said step of controlling delivery of said first medium includes the step of regulating a pressure gradient along which said first medium is delivered.

44. (New) A method according to claim 42 wherein said step of controlling delivery of said first medium includes the step of regulating a humidity gradient along which said first medium is delivered.

45. (New) A method according to claim 42 wherein said step of controlling delivery of said first medium includes the step of regulating a concentration gradient along which said first medium is delivered.

46. (New) A method according to claim 36 including the step of controlling delivery of said second medium to said microorganism when said microorganism has access thereto.

47. (New) A method according to claim 46 wherein said step of controlling delivery of said second medium includes the step of regulating a pressure gradient along which said second medium is delivered.

48. (New) A method according to claim 46 wherein said step of controlling delivery of said second medium includes the step of regulating a humidity gradient along which said second medium is delivered.

49. (New) A method according to claim 46 wherein said step of controlling delivery of said second medium includes the step of regulating a concentration gradient along which said second medium is delivered.

50. (New) Apparatus for producing a biochemical, comprising:
a container, and
microorganism support means, said support means forming a dividing partition defining first and second volumes in said container;
wherein:
said support means has a first face for supporting a microorganism exposed to said first volume and a second face exposed to said second volume;
the first volume is in communication with the ambient atmosphere via a gas permeable plug, and
a portion of the container which at least partially defines the second volume is removable, whilst the first volume remains substantially isolated from the ambient atmosphere.

51. (New) Apparatus according to claim 50 including delivery means for delivering medium supplied to said second volume to a microorganism supported in use on said support means.

52. (New) Apparatus according to claim 51 wherein said delivery means defines a capillary pathway for delivery of medium.
53. (New) Apparatus according to claim 50 wherein said portion of the container which is removable comprises a first receptacle exchangeable with a second receptacle and wherein, in use, said first receptacle contains a first medium providing conditions for growth of a microorganism supported on said support means and said second receptacle contains a second medium providing conditions for biosynthesis of said biochemical by said microorganism.
54. (New) Apparatus according to claim 50 wherein said support means comprises a wicking membrane.
55. (New) Apparatus according to claim 50 wherein the support means comprises hydrophilised polypropylene.
56. (New) Apparatus according to claim 50 wherein said container comprises:
a fermentation receptacle of generally cylindrical shape for storing medium for use by a microorganism;
a lid threadingly engageable to one end of said receptacle, said lid having a throughbore defined by an annular flange extending into said receptacle;

a fermentation vessel having an end adapted for taper-fitting to said flange, the opposite end of said vessel being terminated at an acute angle to its longitudinal axis, and

a polystyrene foam filter for receipt in said throughbore.

57. (New) Apparatus according to claim 50 which is sterilizable by steam sterilization.